

# **ALIGNMENT PROCEDURE**

## **T9753UHF**

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<b>1. TRANSIMITTER ALIGNMENT (TEST CONDITION: USE 7.4VDC 1.2A SUPPLY)</b>			
NO.	ITEM	ALIGNMENT METHOD (WITH PRODUCTION SPEC.)	REMARKS
1.1	Check LCD	<ol style="list-style-type: none"> <li>1. Switch on the power ( SW451), check all segments should display clearly &amp; correctly.</li> <li>2. Check the current should be &lt;40mA.</li> </ol>	
1.2	Rx / Tx VCO	<ol style="list-style-type: none"> <li>1. Connect a voltmeter between CV test point and ground</li> <li>2. Check Rx VCO should be 1.2+/- 0.3V on Frequency 435MHz.</li> <li>3. Connect PTT button to ground.</li> <li>4. Check Tx VCO should be 1.5+/- 0.5V on Frequency 435MHz.</li> <li>5. Release PTT button. Press and hold the MON button monitor green light will be on.</li> </ol>	
1.3	Tx Frequency	<ol style="list-style-type: none"> <li>1. Connect PPT button to ground and select frequency 435MHz</li> <li>2. Adjust VC2 until Tx frequency should be 435MHz +/- 0.30kHz.</li> </ol>	
1.4	Tx Power	<ol style="list-style-type: none"> <li>1. Connect PPT button to ground and select frequency 400MHz and frequency 470MHz</li> <li>2. Check Tx power should be <math>\geq 36\text{dBm}</math> at Ant point</li> </ol>	
1.5	Tx Modulation  Check CTCSS Tone Dev.  Check CTCSS Freq. Error Check Max. Deviation	<ol style="list-style-type: none"> <li>1. Connect PTT button to ground and Select frequency 435MHz</li> <li>2. Apply 6mVrms (-44dBV) with 1kHz at mic input.</li> <li>3. Adjust VR552 until the frequency deviation 1.5k +/- 0.1 kHz and check distortion should less than 3%.</li> <li>4. And also check if Tx frequency response as below: 300Hz = 1 +/- 0.2kHz. and 1.5kHz = 3.0kHz +/- 0.2kHz.</li> <li>5. Select frequency 400MHz with Code 1, 12, 38, the CTCSS Dev = 0.6 +0/-0.15 kHz</li> <li>6. Select frequency 470MHz with code 1, 12,38, the CTCSS Dev = 0.6 +0/-0.15kHz</li> <li>7. Check CTCSS Code 12 should be 100Hz +/-0.2%.</li> <li>8. Increased mic input signal to +40dB, check max deviation should less than 2kHz and less than 2.5k with CTCSS.</li> </ol>	
1.6	Tx FM Noise	<ol style="list-style-type: none"> <li>1. Connect PPT button to ground.</li> <li>2. Connect 220uF E.Cap to mic input and ground.</li> <li>3. Check FM noise should less than 300Hz at frequency 400MHz and frequency 470MHz.</li> </ol>	
1.7	Current Drain at max. Dev	<ol style="list-style-type: none"> <li>1. Connect PTT button to ground and selected frequency 435MHz.</li> <li>2. Check Tx current should less than 1600 mA with max deviation.</li> </ol>	

<b>2. RECIEVER ALIGNMENT (TEST CONDITION: USE 7.4VDC3A SUPPLY)</b>			
NO.	ITEM	ALIGNMENT METHOD (WITH PRODUCTION SPEC.)	REMARKS
2.1	Check Rx Audio Level  Rated Audio Output Power	<ol style="list-style-type: none"> <li>1. Set RF generator to 435MHz and set RF output to -47dBm with 1.5kHz deviation/1kHz.</li> <li>2. Terminated speaker point with 4 ohm load.</li> <li>3. Set speaker output level to 1.0V of unit. Check distortion should be less then 3%.</li> <li>4. Set speaker output level to 1.5Vrms. Check distortion should be less then 4.5%.</li> <li>5. Set speaker output level to max. Check distortion should &lt;10%.</li> </ol>	

2.2	Check Rx Audio Response	<ol style="list-style-type: none"> <li>1. Set RF generator to 435MHz and set RF output to -47dBm with 1.5kHz deviation/1kHz.</li> <li>2. Set speaker output to 1.0V of unit with input signal is 1kHz as reference point (0dB).</li> <li>3. Check Freq. Response : 300Hz = -2 +/-3dB and 2.5kHz = -6 +/-3dB</li> </ol>	
2.3	Rx Sensitivity	<ol style="list-style-type: none"> <li>1. Set RF generator to 435MHz and set RF output to -47dBm with 1.5kHz deviation/1kHz.</li> <li>2. Set speaker output to 1.0V of unit and decrease RF output level to 12 dB sinad.</li> <li>3. Check RF output level of RF generator should less than -123dBm .</li> <li>4. Set RF generator to CH15 with 2.5kHz dev/1kHz.and decrease RF output level to 12 dB sinad.</li> <li>5. The RF output level should less than -123dBm.</li> </ol>	
2.4	S/N ratio	<ol style="list-style-type: none"> <li>1. Set RF generator to 435MHz and set RF output to -47dBm without modulation.</li> <li>2. Set speaker output to max of unit.</li> <li>3. Check (speaker output) S/N ratio should be &gt;40dB.</li> </ol>	
2.5	Rx Audio with CTCSS  Check RX Sens. with CTCSS  Check CTCSS Tone Decoder	<ol style="list-style-type: none"> <li>1. Select 435MHz with CTCSS Code 12.</li> <li>2. Apply -47dBm RF signal with 1.5kHz deviation/1kHz and external input of RF Gen with 0.6kHz deviation/100Hz as CTCSS code.</li> <li>3. A 1kHz signal will be heard from speaker.</li> <li>4. Set speaker output to 1.0V and decrease RF level to 8dB sinad.</li> <li>5. The speaker should be on.</li> <li>6. Increase RF output level to -47dBm and change the external input Freq. of RF Gen. to 200Hz.</li> <li>7. The speaker should be off.</li> </ol>	

### 3. DC CURRENT DRAIN

(TEST CONDITION: USE 7.4VDC 3A SUPPLY ONLY)

NO.	ITEM	ALIGNMENT METHOD (WITH PRODUCTION SPEC.)	REMARKS
3.1	Check Battery Low	<ol style="list-style-type: none"> <li>1. Set the power supply to 5.1V +/-0.15V. Battery low icon should be flashing.</li> </ol>	
3.2	Check Standby Current (squelched)	<ol style="list-style-type: none"> <li>1. Check the standby current should less than 40mA(squelched).</li> </ol>	
3.3	Max . Audio Output	<ol style="list-style-type: none"> <li>1. Adjust speaker volume to set speaker output level &gt;1.0V and distortion 5%.</li> <li>2. Check current should less than 200mA.</li> </ol>	
3.4	Check charging current	<ol style="list-style-type: none"> <li>1. Switch off the unit. Check charging current should less than 300 +/-30mA with 9Vdc/800mA DC adaptor.</li> </ol>	

**Notice:** The other functional tests, please referred to T9753 Operation Specification.

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